REMARKS

Claims 45-47 and 49-55 are rejected; and that claims 29-44 and 48 are withdrawn from consideration as being directed to a non-elected invention.

The elected polymer includes the structural unit M represented by formula (2) where a=1-3; b=0 and c=1. Thus, unit M has a side chain including an ether bond and a terminal group represented by Rf which is a fluorine-containing alkylene group having 1 to 5 >C=O units. As discussed at page 12, lines 6-14 of the specification, the >C=O unit in Rf has the ability of forming a stable complex or salt with a rare earth metal ion by an ion exchange reaction. Examples of Rf are given at page 12 *et seq.*

Review and reconsideration on the merits are requested.

Claims 45-47 and 49-55 remain rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,869,693 to Fryd et al. in view of EP 1 072 905 A1 to Koike et al. for reasons of record.

Fryd et al. was cited as teaching an enolate or beta-dicarbonyl ligand so as to complex metal ions (i.e., the group Rf having 1 to 5 >C=O units), and was further cited as teaching that other types of polymers or copolymers including polyvinyl ethers or polyacrylates have been shown by Fryd et al. to be useful in carrying such functional groups. Koike et al. was cited as preferably employing a fluoropolymer having an ether type structure described in formulae (1) to (3) at page 3, the Examiner asserting that Koike et al. thereby teaches the advantages of the use of an ether structure and a fluoropolymer whenever a keto-type chelate is mixed. The reason for rejection was that it would have been obvious to modify Fryd et al.'s polymeric composition by using an ether-type perfluoropolymer carrying a fluorinated metal chelate as a moiety inside of

the polymer's pendant group as said to be taught by Koike et al. As motivation for making the asserted combination, the Examiner explained that one would expect a better and more diversified fluorinated copolymer having improved optical transparent properties and exhibiting reduced loss, etc.

Applicants traverse, and respectfully request the Examiner to reconsider for the following reasons.

Claim 45 is directed to a fluorine-containing polymer (I) having a functional group represented by formula (1) in which the structural unit M is a structural unit derived from a fluorine-containing ethylenic monomer represented by formula (2). In formula (2), Rf is a fluorine-containing alkylene group having 1 to 5 >C=O (carbonyl) units or a fluorine-containing alkylene group having ether bond which has 1 to 5 >C=O units.

Turning to the cited prior art, Koike et al. in paragraph [0027]-[0028] and in Tables 1 and 2 describes that:

> [0027] When the above-mentioned fluorine-containing polymer is used as the non-crystalline polymer (a), it is preferred to use as the metal chelate compound (b) a metal chelate compound having a fluorine-containing compound as a ligand. Specifically, metal chelate compounds having fluorine-containing compound Nos. 9 to 37 as indicated in the following Tables 1 and 2 as ligands, are preferred from the viewpoint of the stability in the fluorine-containing polymers or in the fluorine-containing monomers capable of forming such fluorine containing polymers. ...
>
> [0028] ...Further, one having fluorine atoms has an improved solubility when the matrix non-crystalline polymer (a) is a fluorine-containing polymer, whereby dispersion of the metal chelate compound (b) in the non-crystalline polymer (a) will be more uniform, thus providing an effect to suppress the increase of light scattering, although the refractive index may decrease. ...

As is clear from the above description, all of the ligands forming the metal chelates shown in Tables 1 and 2 are not polymers, but rather low molecular weight compounds. Further, the problem to be solved in Koike et al. is to disperse the metal chelate compound (b) more uniformly in the non-crystalline polymer (a). Namely, according to Koike et al., in order to improve dispersibility of the metal chelate compound in the subject non-crystalline fluorine-containing polymer, suitable selection of a ligand for the metal chelate compound is disclosed. There is, however, no teaching to modify the non-crystalline fluorine-containing polymer side chain.

From another aspect, selection of metal chelate compound is discussed to a limited extent in paragraph [0027] "When the above-mentioned fluorine-containing polymer is used as the non-crystalline polymer (a)". The above-mentioned fluorine-containing polymers used as the non-crystalline polymer (a) having ether structures are polymers having the specific cyclic ether structures represented by the formulae (1) to (3).

The Examiner considered that it would have been obvious to modify Fryd's polymeric composition by using "an ether-type perfluoropolymer carrying a fluorinated metal chelate as a moiety inside the polymer's pendant group as taught by Koike of "an ether-type perfluoropolymer carrying a fluorinated metal chelate as a moiety inside the polymer's pendant group". In Koike, as explicitly described, "**dispersion** of the metal chelate compound (b) in the non-crystalline polymer (a) will be more uniform", but the fluorinated metal chelate is not "a moiety inside the polymer's pendant group" of the ether-type perfluoropolymer.

Considering the problem to be solved (improved dispersibility) and associated description of the metal chelate compound (b) and the polymer (a), Koike et al. teaches nothing more than the combination of the metal chelate compound having a specific ligand and a specific non-crystalline fluorine-containing polymer having a specific cyclic ether structure. There is nothing in Koike et al. which would lead one of ordinary skill to extend the disclosure of Koike et al. towards modifying the specific non-crystalline fluorine-containing polymer having the specific cyclic ether structure to provide a ligand with the polymer.

Fryd et al. relates to a metal complex polymer which corresponds to the metal chelate compound (b) of Koike et al. However, there is no concrete disclosure of a fluorine-containing polymer. The present applicants could not find any teaching in Fryd et al. which would suggest modifying along the lines of Koike et al., because Koike et al. does not teach or suggest any modification of the non-crystalline fluorine-containing polymer as discussed above.

Even if one skilled in the art were to combine Koike et al. with Fryd et al., at most this would involve replacing the metal chelate compound (b) of Koike et al. with the metal complex polymer of Fryd et al. Thus, such combination also could not reach the Applicants' invention.

From yet a different perspective, Koike et al. concerns a refractive index distribution type light transmitting device comprising a non-crystalline polymer (a) and a metal chelate compound (b), where (b) is distributed in the non-crystalline polymer (a) with a concentration gradient in a specific direction (Abstract). That is, in Koike et al., the fluorine-containing polymer having the side chains including an ether bond as shown in formulas (1) to (3) at page 3 constitute the non-crystalline polymer (a) and have nothing to do with the metal chelate compound (b). Because

the ether linkage in Koike et al.'s compound has nothing to do with forming a complex with the rare earth metal ion, the Examiner has not explained why such teaching would suggest including an ether bond in the side chain of the compound of Fryd et al. which is intimately involved in forming a complex with a rare earth metal ion by virtue of the >C=O units.

The present invention relates to a novel polymer, and has been completed by finding that the **novel** polymer is useful as an optical material. Namely, in both Fryd et al and Koike et al, there is no teaching, suggestion or disclosure as to the claimed novel polymer having, at its side chain, a fluorine-containing alkaline group having 1 to 5 carbonyl units, namely, the novel polymer of formula (1) having the fluorine-containing ethylenic structural unit M represented by formula (2).

The Examiner's approach with respect to the combination of Fryd et al. and Koike et al. is hindsight reconstruction of Applicants' invention. One of ordinary skill could never arrive at the present invention, without first seeing the present novel polymer and without first reading the instant specification.

For the above reasons, it is respectfully submitted that claims 45-47 and 49-55 are patentable over Fryd et al. in view of Koike et al., and withdrawal of the foregoing rejection under 35 U.S.C. § 103(a) is respectfully requested.

Withdraw claims 29-44 directed to a fluorine-containing resin composition also require the fluorine-containing polymer (1) of claim 45 where Rf is a fluorine-containing alkylene group or fluorine-containing alkylene group including ether bond having 1 to 5 >C = O units. Claims 29-44 are therefore patentable for the same reasons that claim 45 is patentable over the prior art.

The same holds true for withdrawn claim 48. Therefore, if claim 45 is found to be allowable, Applicants respectfully request the Examiner to withdraw the restriction/election of species requirement and to also allow claims 29-44 and 48 containing the same patentable features as claim 45.

Withdrawal of all rejections and allowance of claims 29-55 is earnestly solicited.

In the event that the Examiner believes that it may be helpful to advance the prosecution of this application, the Examiner is invited to contact the undersigned at the local Washington, D.C. telephone number indicated below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

Abraham J. Rosner
Registration No. 33,276

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

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